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A Study of the Relationship Between Public K-8 and Middle Schools and Student  
Achievement in One South Carolina School District

By

Marc Zachary

Bachelor of Arts  
Clemson University, 1992

Master of Education  
Converse College, 1998

Educational Specialist  
Converse College, 2002

---

Submitted in Partial Fulfillment of the Requirements

For the Degree of Doctor of Philosophy in

Educational Administration

College of Education

University of South Carolina

2014

Accepted by:

Lynn Harrill, Major Professor

Zach Kelehear, Committee Member

Ed Cox, Committee Member

Amy Ballard, Committee Member

Lacy Ford, Vice Provost and Dean of Graduate Studies

### *Dedication*

To Mom—Thank you for supporting me throughout my educational journey. You encouraged me to continue, even when I did not think I could.

To Dad--- It has been a while since you have been with us, but you always set a great example. Seeing other families in my adult life has convinced me that Kim and I had the best parents growing up.

To Dr. Harrill--- I have had the privilege of taking master's classes under you as well as doctoral classes. I have the highest respect for you and thank you for pushing me to the finish line.

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### *Abstract*

This study examined the impact of grade configuration on academic achievement. Specifically compared were 6-8 middle schools versus a K-8 school in one upstate South Carolina district. One purpose of this study was to determine if the performance, as indicated by the Measures of Academic Progress (MAP) reading and math tests, was different for students enrolled in grades 6-8 in a certain school configuration. The other purpose was to determine if reading and math growth during the transition year from elementary to middle school is higher in 6-8 middle schools or K-8 schools.

The researcher utilized data from 3 schools, with 2 of the schools being 6-8 middle schools and one school being K-8 in configuration. All schools are within one upstate urban South Carolina school district.

Data were retrieved from the NWEA website and consisted of reading and math MAP scores from 6-8 middle school students. Data from the K-8 and middle schools were processed using the SPSS statistical program. The data were analyzed to determine if there was a significant interaction between school type and student achievement.

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## *CHAPTER 1*

### *Introduction*

Developing a structure of schools for students in “middle grades”, specifically the span from sixth grade through eighth grade has been a challenge for decades and one of persistent dissatisfaction for educators and parents. Researchers note that “elementary schools produce the same reading and math growth in two years that middle schools produce in three years” (Fielding, Kerr, & Rosier, 2007). This dissatisfaction is the catalyst for this study, which investigates the relationship between middle grades students in K-8 schools and middle grades students in schools housing grades six through eight. The focus of this study will be to investigate whether there is a relationship between school structure and student achievement of students in grades six through eight.

### *Problem Statement*

Wise and Kipnes (2006) state that “the history of efforts in the United States to develop structures of schooling for the middle grades is one of continual tinkering and persistent dissatisfaction” (p. 239). Prior to the twentieth century, the division of twelve years of primary and secondary education into an eight-year elementary school and a four-year high school was the primary model

for American public schools (Manning, 2000). American education moved toward junior highs in the early twentieth century, and this remained the accepted way to educate middle grade students for more than fifty years. By the 1950s, dissatisfaction was beginning to grow with junior highs. Hanson and Hearn (1971) expressed increasing concern as to whether the junior high was appropriately responsive to the special needs of early adolescents. Arguments were made that junior highs mirrored high schools in curriculum and instruction, extra-curricular activities, and teacher attitudes.

Advocates for the middle school movement in the 1960s sought to reorganize the grade configuration at the middle levels and to make these schools more developmentally appropriate for students. Eichorn (1966) specified a school model that would serve as a bridge to help students make the transition from the classrooms of elementary schools to the departments and class periods of high schools. Enthusiasm for middle schools grew, and the number of schools with sixth through eighth grade configurations grew rapidly in the 1970s. Although the transition from junior highs to middle schools occurred rapidly, the results were largely disappointing. One reviewer of middle school education said that “changes were restricted largely to the names of schools and the grades they contained” (Mac Iver and Epstein, 1992, p. 835).

Despite the lack of real change, the middle school movement remained strong until recently. Numerous researchers and educators have grown dissatisfied with the results middle schools have received and seek to educate students through other schooling forms. In the 1990s, researchers from a variety

of disciplines examined the academic and social outcomes of middle schools. According to Anderman (2002), almost all have concluded that middle schools are not good for early adolescents.

One of the more popular forms of educating middle grades' students is keeping these grades in the elementary school. The term "elemiddle schools" is gaining popularity as more K-8 schools are opened throughout the United States. Larger cities such as Boston, Baltimore, Cincinnati, Philadelphia, Oklahoma City, and Cleveland are moving away from traditional middle school configurations and toward K-8 schools. In South Carolina, thirteen public K-8 schools, excluding charter schools, are now in operation in seven school districts.

Researchers and educators cite several reasons to support K-8 schools over middle schools. One reason is that academic achievement in K-8 schools seems to outshine achievement in traditional middle schools. For example, in Philadelphia, school leaders found that eighth graders in K-8 schools scored significantly higher than those in middle schools on standardized tests of achievement in reading, mathematics, and science (Pardini, 2002). This was also significant because researchers controlled for the effects of poverty and race in the study of Philadelphia's schools. Also of note in this study was the achievement of ninth grade students who leave K-8 schools. Data collected in Philadelphia showed that ninth grade students who attended K-8 schools displayed higher GPAs in ninth grade than students from middle schools (Look, 2002). Moreover, in a study of sixteen school districts completed by the Northwest Regional Education Laboratory it was found that students who

attended middle schools experienced greater achievement loss in the transition to high school than students making the transition from a K-8 school (Klump, 2006).

A second reason educators and researchers cite for supporting K-8 schools over middle schools is preventing the flight from public schools once children leave the elementary grades. In Oklahoma City, for example, most district elementary schools were reconfigured into K-8 schools to stem the exodus of students from the district after completing elementary school (Pardini, 2002). Pardini also noted that Kathleen Ware, associate superintendent for the Cincinnati Public School District, stated its five-year transition to K-8 schools was largely in response to parental dissatisfaction with the district's middle schools. Districts have strong reasons for preferring the K-8 structure, especially in large urban areas. A 2007 study by Byrnes and Ruby found that when making the transition from an elementary to middle school, many students leave the district entirely in what is considered to be a flight from failing urban public school systems.

In a Florida study, Abella (2005) surveyed parents who had recently transitioned from traditional middle schools to K-8 schools as a part of Miami-Dade County Public Schools pilot program. In that survey, parents overwhelmingly preferred the K-8 structure to the traditional middle school model from which they had transferred. A 2007 Johns Hopkins University study of Philadelphia K-8 schools found that parents felt that K-8 schools can create true neighborhood schools. The study in Philadelphia reported that K-8 schools are often closer to

home in terms of travel and that parents like the longer grade span because families with several children have siblings in the same school for a longer period of time.

A third reason researchers and educators cite for supporting K-8 schools over middle schools is that behavior is better in K-8 schools. A report completed by Milwaukee Public Schools states that suspensions are lower among middle-school-age children at K-8s (Carr, 2006). Another study indicated that relationships are stronger among the students and between the teachers and students (Anderman, 2002). One study noted that interpersonal relationships are also demonstrably less positive in middle schools than in other schooling forms, and some researchers have argued that the middle school provides a structure to facilitate negative behaviors such as cruelty or meanness among their students (Weiss and Kipnes, 2006). This same study also found that students felt less support from their teachers and greater hassles in daily school life when in traditional 6-8 middle schools.

In Salt Lake City School District's study of two California K-8 schools, a decrease in discipline problems was noted as one of the advantages by one of the principals interviewed. In the study of Philadelphia schools, it was noted that middle grade students in K-8 schools behave differently than in middle schools. Students seem to take on the role of protector and role model as opposed to having to establish new reputations upon entering middle schools (Look, 2002). In Milwaukee, researchers found that by the end of eighth grade, students in the K-8 school showed higher self-esteem, less victimization by other students,

greater participation in extracurricular activities, and healthier adolescent development than students in middle schools (Look, 2002).

Better discipline in K-8 schools allows students to feel safer while attending school. In the study of Philadelphia's schools, it was found that students felt safer and more nurturing, particularly in city schools (Carr, 2006). This feeling of safety allows students to focus less on conflict, and more on other areas. Numerous studies indicate that this feeling of safety helps improve attendance rates, student dress and language, and relationships among students and staff.

Close relationships among students and staff can help create a more disciplined school environment. One researcher claimed that K-8 schools can enhance social capital and give at-risk students, in particular, greater opportunities at success by building relationships with staff over a course of nine years (Look, 2002). It was noted that K-8 schools reduced affective difficulties for adolescents, there was less peer pressure, and interestingly a less sexually charged environment. Later initiation of sexual activity was noted in a report completed by the Educational Research Subcommittee (Mac Iver & Mac Iver, 2006).

Several factors seem to support that teachers serving in K-8 schools have greater job satisfaction than their middle school counterparts. K-8 teaching staffs averaged three years greater experience compared to teachers at middle schools, while also having lower rates of teacher absenteeism and greater proportions of certified teachers (Byrnes and Ruby, 2007). K-8 schools can also



foster more close-knit school communities since students remain in the same school with the same peers for a longer period of time. District level leadership advocate for K-8 schools because they are often more cost-efficient in terms of building and property maintenance in comparison to separate elementary and middle schools.

### *Purpose*

Nearly all elementary school age students make annual growth in reading and math during one school year, but nearly half of middle school students nationwide do not make annual growth during the middle school years (Fielding, Kerr, & Rosier, 2011). Poor student achievement, disciplinary problems, and overall dissatisfaction with the affective climate of middle schools have caused numerous school districts throughout the United States to implement K-8 schools instead of the traditional 6-8 middle school model. In her 2013 study comparing school structure on student achievement in Arizona, Shannon Hannon recommended further research be conducted utilizing one school district that has both middle school and K-8 configurations. While several studies on achievement and school structure have been done, none were completed in the southeast with both school structures within the same district. This study used MAP data to analyze the longitudinal growth for all 6<sup>th</sup>-8<sup>th</sup> grade students from 2009-2013 in one upstate South Carolina school district that has both middle school and K-8 configurations. Data were analyzed to see if there was a difference in academic

growth between students in traditional middle schools and their counterparts in K-8 schools. Data were also analyzed to see if there was a difference in academic growth during the 5<sup>th</sup> to 6<sup>th</sup> grade transition between students in traditional middle schools and their counterparts in K-8 schools. The results should be of significance to districts and schools considering reform in their middle grades.

### *Research Questions*

To accomplish the purposes described above, the following research questions were addressed:

1. Is there a difference in reading growth for students from 5<sup>th</sup> to 8<sup>th</sup> grade in a K-8 school versus those in traditional 6-8 middle schools?
2. Is there a difference in math growth for students from 5<sup>th</sup> to 8<sup>th</sup> grade in a K-8 school versus those in traditional 6-8 middle schools?
3. Is the reading achievement growth of students from 5<sup>th</sup> to 6<sup>th</sup> grade different when the transition to middle school is within a K-8 school versus when the transition is from an elementary to a traditional 6-8 middle school?
4. Is the math achievement growth of students from 5<sup>th</sup> to 6<sup>th</sup> grade different when the transition to middle school is within a K-8 school

versus when the transition is from an elementary to a traditional 6-8 middle school?

### *Background Within the District*

The district being studied is in upstate South Carolina. The district serves approximately 7,000 students and has a rich history of offering opportunities in the arts, sports, and academics. One unique aspect of the district is that it serves such a diverse population of students. According to the South Carolina Department of Education's poverty index, of the 56 elementary schools in the county's seven districts, the district in which the study is taking place has the schools with the highest poverty rating (98.87) and the lowest poverty rating (40.97). Thus, the district represents the widest range within the county. Furthermore, while achievement in the lower poverty school was "Excellent" in 2012, its inner-city, high poverty, counterpart was "Below Average" the same year as rated by the South Carolina Department of Education.

For decades, the district had the highest enrollment of all districts in the county. This began to change in the 1990's. Enrollment that once exceeded 12,000 students was down to nearly 7,000 in a twenty year time-period. Crime within the city and newer, less expensive housing for families in other districts were two reasons for the drop in student population. Furthermore, the district employed six different superintendents in one decade, which was seen as a

negative in the community. This instability in leadership began to change in the mid 2000's as new leadership entered and remained in place (Shoolbred, 2013).

A big issue that the new leadership faced was that, of the nine elementary schools in place in 2005, few were near capacity. This resulted in one elementary school closing before the 2006 school year, with students being rezoned for three other district schools. Another concern was that one of the three junior high schools was losing students at a rapid rate. A school that previously housed 800 middle school students in the 1990's was serving nearly 300 a decade later. By 2009, it was clear to the district leadership that two things needed to be done. First, the district needed to close the junior high school that was losing many students and rezone them for the two other junior high schools. Second, the district needed to restructure. Out of the 85 districts in South Carolina, this district was one of two that still served adolescent students in junior high schools. A decision was made to close one junior high school, close one additional elementary school, and create an Early Learning Center at an elementary school that was closing. Additionally, the two junior high schools would become middle schools, and a Freshman Academy would be built to accommodate the ninth grade students in the district.

There was one potential problem with the restructuring. The district leadership was concerned that there may not be enough space to restructure three junior high schools into two middle schools for the following year. As a result, discussions began about possibly restructuring one elementary school to serve kindergarten through 8<sup>th</sup> grade students. The school they chose had the

capacity to house over 850 students but at the time was serving only 650.

Another reason they chose this particular school was that over the previous five years, an average of 40% of their students ended up going to different schools than the one they were zoned to attend. Students were either opting to attend another junior high in the district, or were leaving the district to attend middle schools in other districts. One potential way to keep students from leaving, while helping not to overcrowd the other two middle schools, was to create one K-8 school.

Beginning in 2010-11, the other elementary schools in the district stopped serving 6<sup>th</sup> grade students, and they were assigned to middle schools. One district elementary school became a K-8 school, with students continuing to attend the school that many of them had attended since five year old kindergarten. Of the 85 sixth graders at the school in the spring of 2010, a class of 60 students moved up to seventh grade for 2010-11. The following school year, of the 95 fifth graders who might have chosen to attend other middle schools, 88 remained at the school. In 2011-12, the school began serving 8<sup>th</sup> graders for the first time.

As of the 2010-11 school year, the district had two traditional 6-8 middle schools and one K-8 school. Each middle school had three elementary feeder schools. The K-8 school was its own feeder school, meaning that the only students attending middle school in it were the ones who lived in that attendance zone. Although the school configurations differed, there were many similarities in all three 6-8 programs. Table 1.1 below will cite the similarities and differences.

Table 1.1

*Comparisons of Two School Structures*

K-8 structure	6-8 structure
One team of 4 core teachers	Multiple teams of 4 core teachers
55 minute classroom periods	55 minute classroom periods
3 elective periods daily	3 elective periods daily
2 planning periods for each core teacher	2 planning periods for each core teacher
Spanish/French/Latin foreign language electives	Spanish/French/Latin foreign language electives
7 <sup>th</sup> and 8 <sup>th</sup> grade athletics, except wrestling	7 <sup>th</sup> and 8 <sup>th</sup> grade athletics
No academic detention and limited A+ Credit Recovery Lab	After school academic detention and A+ Recovery Lab offered throughout the year
Limited electives	Full range of electives
80-90 students per grade level	200-250 students per grade level
88% poverty index	55% and 99% poverty indices

### *Significance*

Since No Child Left Behind was passed in 2002, a focus on accountability and achievement, as measured by standardized test scores, has become prominent. At the same time, researchers continually publish new books, articles, and studies about best practices in teaching. The main goal of public education is to improve student achievement, and yet, there are groups and students of certain age-ranges who struggle to achieve at high levels. This seems to be particularly true of the middle school grades, where students seem to struggle to grow academically as much as they did in earlier grades. This study sought to discover a possible relationship between school structure in the middle grades and student achievement in an urban South Carolina school district. By determining the academic growth of all middle grades students in one district that serves students in both middle grades structures, leaders can use the information to alter school structures if necessary.

### *Delimitations*

There are several delimitations of this study. First, the researcher studied only one district in South Carolina. In addition, the district's K-8 school has an enrollment of approximately 90 in each grade level, while the middle schools in the study have approximately 250 in each grade level. Finally, the level of

teacher experience, or level of school leadership expertise, were not controlled for in this study.

### *Definition of Terms*

Because terminology often varies from text to text, the researcher wishes to avoid possible confusion. In an effort to minimize ambiguity, the researcher will define several essential terms as follows:

1. middle school: A school intermediate between elementary school and high school, usually encompassing grades five or six through eight. For the purpose of this study, middle school will refer to a school containing grades 6-8 exclusively.
2. junior high school: A school attended after elementary school and usually consisting of grades seven through nine. For the purpose of this study, junior high schools will refer to schools containing grades 7-9 exclusively.
3. K-8 school: K-8 schools will refer to schools that encompass all grades, kindergarten through 8<sup>th</sup> grade, in the same school building.
4. MAP (Measures of Academic Progress): “a state-aligned computerized adaptive assessment program that provides educators with the information they need to improve teaching and learning”, developed by the NWEA, or Northwestern Evaluation Association (Northwest Evaluation Association, 2014).



5. RIT score (Rasch Unit): “RIT measures understanding regardless of grade level, so the information helps to track a student’s progress from year to year” (Northwest Evaluation Association, 2010).

### *Organization of the Study*

This study was organized into five chapters and a bibliography in the following manner. Chapter 2 presented a review of related literature dealing with trend of middle grades’ education returning to the K-8 model and some of the advantages and disadvantages to this school model. Chapter 3 delineated the research design and methodology of the study. The instrument that was used to gather the data, the procedures followed, and determination of the sample selected for study, are described. An analysis of the data and a discussion of the findings are presented in Chapter 4. Chapter 5 contains the summary, conclusions, and recommendations for further study. The study concluded with a bibliography.

## CHAPTER 2

### *Literature Review*

C.S. Lewis once wrote, “If you are on the wrong road, progress means doing an about-turn and walking back to the right road; and in that case, the man who turns back soonest is the most progressive man. Going back is the quickest way on.” (1943) This could summarize what some schools and districts are doing across the country in returning to the K-8 education model. The history of middle-grades education has spanned nearly 100 years and has undergone changes from the K-8 model in the nineteenth century, to a junior high model in the early twentieth century, and then a switch to middle schools in the 1960’s. There has recently been a movement to revive the K-8 model. This chapter will examine the debate regarding middle-grades education; the literature review presented here will be divided into five sections. First, this review will summarize the middle-grades reform process and give historical background. Second, an analysis will be made of the academic and behavioral concerns of many traditional 6-8 middle schools. Third, peer and student to teacher relationships will be considered. Fourth, other variables such as teacher experience, parent involvement, and cost effectiveness will be discussed. Finally, critics of the K-8 movement and disadvantages of K-8 schools in comparison to middle schools will be presented.

### *History of Grade Span Configurations*

Middle grades' education has been debated for many years by educators and policy makers. John Lounsbury writes, the development of middle grades education is the "longest running, most extensive educational reform movement in the United States" (1991, p.68). The one room, ungraded schoolhouse was a popular facility for many years. One room ungraded schools merged to larger schools, thus the introduction of the graded school system in the mid 1800's (Dove, Pearson, & Hooper, 2010). In 1900, the predominant configuration was still 8 years of primary school and 4 years of high school, and 80% of the 1920 high school graduates had attended an elementary school that contained grades 1-8, followed by the 4-year high school (Juvonen, Le, Kaganoff, Augustine, & Constant, 2004). Throughout the early 1900's, schools that contained the first eight grades dominated the nation (Look, 2002).

In the early 20<sup>th</sup> century, our country changed from a mainly agricultural society to more of an industrial society, which meant that children needed more education to secure better jobs. The rise and fall of the junior high was perhaps the largest change regarding grade span configuration in the 20<sup>th</sup> century (Paglin and Fager, 1997). The growth of early childhood programs and the baby boom caused elementary enrollments to rise, pushing the seventh and eighth grade students into junior high schools (Dove, Pearson, & Hooper, 2010). Junior high schools were initially designed to serve as a transition to the more rigorous high school, and this configuration remained popular throughout the 1950's and

1960's (Craig, 2006). By the 1950's however, there was growing discontent as to whether junior highs were effectively educating adolescents. Critics charged that the junior high was falling well short of its goal to effectively educate adolescents and that it merely duplicated high schools in its programs and policies (Weiss & Kipnes, 2006). According to Larry Cuban, junior highs mirrored the high schools they were designed to supplant in curriculum, instruction, organization, teacher attitudes toward subject matter, and extracurricular activities (1992, p.242).

In the early 1960's, middle schools began to replace junior highs as the preferred configuration to educate adolescents. The first middle school was created in Bay City, MI in 1950 (Banks, 2004). In the 1970's and 1980's, middle schools grew rapidly and embraced housing sixth through eighth grade students. In the early 1970's, less than one-quarter of middle schools incorporated sixth grade; by 2000, three quarters of all middle schools enrolled sixth grade students (Cook, MacCoun, Muschkin, & Vigdor, 2007, p.2).

American middle schools were seen as a modification to traditional junior high schools. Junior high schools were designed to prepare students for the greater rigors of high school. Middle school proponents felt that middle school environments could not only support students' academic needs, but better support their self-esteem and identity development needs and pay better attention to their physical, social, sexual, and mental health. However, as districts made the change from junior highs to middle schools, some felt that academics took a back seat to students' affective needs. In the 1980's, middle schools were hijacked by those who saw them not as places for systematic teaching and

purposeful learning but, in the words of one prominent middle school activist, as “the focus of social experimentation” (Yecke, C. 2005). The result of this shift in focus from academics to self-exploration and socialization marked a decline in academic achievement.

Experts in middle grades education are quick to distinguish between middle schools and the middle school concept. Middle schools are simply schools with organizational groupings that generally contain grades six through eight. The middle grade concept, on the other hand, is a philosophical approach to how adolescents should be educated and what their needs are. Gallagher (1991) says that the middle school concept is the belief that the purpose of these schools is to create students who are imbued with egalitarian principles; who are in touch with their political, social, and psychological selves; and who eschew competition and individual achievement to focus on identity development and perceived societal needs. Although many U.S. middle schools are flourishing with strong and rigorous academic programs, the middle school concept—the notion that middle schools should be havens of socialization and not academies of knowledge—has wrought havoc on the intellectual development of many middle school students (Yecke, 2005).

In 1996, a policy brief issued by the U.S. Department of Education declared: “U.S. students don’t start out behind; they fall behind” (Yecke, 2005). In the same policy brief, Dr. William Schmidt of Michigan State University went on to declare that one of the more serious issues facing education is the precipitous decline in our international ranking in education from fourth to eighth grade.

Considering the numerous problems in educating early adolescent students, one solution growing in popularity is moving middle grades back into the elementary school setting. David Hough (2005), the director of the Institute for School Improvement at Southwest Missouri State University, is credited with coining the term *elemiddle school* in the early 1990's. He asserts that K-8 schools, or elemiddle schools, are implementing best practices in the middle grades more effectively than middle schools. He further states that "K-8 elemiddles are the ones buying into this philosophy most fully and completely, and that's why their test scores are higher, their attendance rates improved, discipline referrals reduced and dropout rates lowered"(p.2).

School leaders throughout the country are singing the praises of the K-8 school model. The K-8 model is being implemented in cities such as Cincinnati, Philadelphia, Boston, Oklahoma City, and Baltimore. Cleveland also has implemented the K-8 model in a district of 77,000 students. Barbara Byrd Bennett, executive officer of Cleveland schools, came to the conclusion that the 25 middle schools in Cleveland were failing. Therefore, in 1998, the district began phasing out middle schools and replacing them with K-8 schools. She concluded that schools are taking children at 10 years of age—at their most delicate—and ripping them from a stable school environment. She went on to say that we then place the students in a new school where they have to move from class to class, learning to deal with a series of other adults while they are still learning to deal with each other (Pardini, 2002). The change in structure resulted in better attendance and higher standardized test scores.

Moving toward the K-8 school structure has also been the result of middle-class flight from the public school system. Middle class families serve as the most ardent volunteers, advocates, and fundraisers for public schools, yet are moving their children to private schools at an alarming rate. In a long-term study performed by Public Agenda, the percentage of the public expressing a “great deal” or “quite a lot” of confidence in America’s public schools had declined from 54% in 1977 to 37% in 2005 (Carr, 2006). One of the primary reasons school systems are making the change to the K-8 school model is parental dissatisfaction with middle schools. Associate Superintendent of the Cincinnati Public School District, Kathleen Ware, says that families would stay with public education through the elementary years, but leave public schools when their children got to middle school (Pardini, 2002). She said the reasons included discipline problems, high suspension and expulsion rates, poor attendance, and lack of achievement. When asked where the children transferred to, she answered that many transferred to private schools which were already K-8 in structure.

The Rand Corporation, a nonprofit research group in Santa Monica, California, reviewed 20 years of educational research and released a report entitled *Focus on the Wonder Years: Challenges Facing the American Middle School*, and offered a sharp critique of middle schools. Findings concluded that more than half of eighth graders fail to achieve expected levels of proficiency in reading, math, and science. When compared to international students, U.S. students ranked 9<sup>th</sup> out of 17 in grade 4, but sank to 12<sup>th</sup> out of 17 in grade 8,

setting the stage for even further slippage in high school. A survey was given to students in this study, and it was found that U.S. middle school students had the most negative views of the climate of their schools and peer culture. Finally, perhaps more alarming was the finding that crime takes off in middle school, with 45% of public elementary schools reporting one or more incidents to police with the figure jumping to 74% for middle school students (Wallis, Miranda, Rubiner, 2005).

Supporters of K-8 schools advocate that keeping middle grade students in an elementary setting longer reduces many of these problems. The *Wall Street Journal* recently reported that there is a “growing body of evidence” that preteen students do better when they can remain in their familiar elementary schools for longer—with better grades and fewer disciplinary problems than their middle school peers (Chaker, 2005, p. D1). Studies in Connecticut and Maine suggest that grades 6 and 8 are best included in elementary grades. In Connecticut, 6<sup>th</sup> grade student achievement was higher when 6<sup>th</sup> grade was included with lower grade levels, and in the Maine study, it was concluded that student achievement was higher when 8<sup>th</sup> grade was included with elementary grades (Howley, 2002).

Some bodies of research suggest that certain students never fully adjust to the middle school environment. Factors in the middle school environment that challenge students include: multiple sets of classroom rules, different behavior expectations from teachers, and having to make new friends (Theriot and Dupper, 2010). In addition, meeting the different academic demands of middle school with such basic tasks as taking tests and note taking can seem like extra



pressure to a middle school student. K-8 school advocates feel that students who remain in the elementary setting can acquire the same skills as middle school students, but not feel the pressure of a new environment.

Many school districts choose to have students make multiple transitions as they proceed through their schooling. For example, it is not uncommon to have students attend a primary school until grade 3, transition to an intermediate school through grade 6, followed by a transition to middle school through grade 8, then to a Freshman Academy for grade 9, then finally to another location for high school. Coleman's (1974) focal theory of change argues that the cumulative effects of multiple life changes in different aspects of one's life can have a negative impact on psychosocial functioning. Thus, a more gradual adjustment to life's transitions, spread over more time, can be beneficial. The theory suggests that the timing of adult-imposed changes on children ages 10-14, such as school transitions, should be considered carefully.

According to Larson, "Early adolescence may be a life stage of greater relative instability" (Larson, Moneta, Richards, & Wilson, 2002, p. 1154). Larson and colleagues (Larson et al., 2002; Larson & Lampman-Petratis, 1989; Larson & Richards, 2000) found evidence of a peak in unhappiness during early adolescence. Their research revealed a downward trend in emotional state among White and African American, urban and suburban, working and middle class, and fifth through eighth grade boys and girls that stopped at tenth grade. Larson did not examine the relationships between school grade configurations and negative affect; nevertheless, students in grades 5 through 7 showed the

greatest emotional instability. Requiring students in these grade levels to experience more transitions seems ill-advised.

In 2005, the National Governors Association announced a new initiative to address the drop-out rate in U.S. high schools. Across the country, nearly one-third of American students eventually drop out, which annually costs the U.S. economy an estimated \$16 billion in lost productivity (Yecke, 2006).

Unfortunately, the seeds that produce high school failure are sown a number of years prior to high school in many cases. Leading researchers have suggested that the transition to junior high school and the associated difficulties experienced by students contribute significantly to numerous long-term outcomes including high school drop-out, social and emotional difficulties, and frequent alcohol and drug use (Eccles, Lord, Roeser, Barber, & Hernandez Jozefowicz, 1997). One study found that girls who attended schools with kindergarten to eighth grade configurations made a healthier transition into high school than girls who attended more typical middle schools (Simmons and Blyth, 1987).

### *Middle School Academic/Behavioral Concerns*

At the age of 10 or 11, many students move from the elementary school they have always attended to a middle school. These new schools may be larger, farther away from home, and may have multiple other elementary schools feeding into their population. Cook et al. (2007) examined the effect of transition on sixth-grade students in North Carolina. The focus of the research was to study

the effects of grade span configuration on student behavior in sixth-grade students who were in K-8 schools as opposed to those in the middle school setting. Behavior problems rose and academic achievement dropped during the first year of transition into middle school, even when adjusting for socioeconomic and demographic characteristics of both the students and the schools attended. These trends did not hold true for the sixth graders attending K-8 schools. A study conducted in Cleveland compared all of the district's sixth graders in K-8 schools to their counterparts in their district's 6-8 middle schools. Even when controlling for the differences in prior levels of achievement from Grade 5, there was a statistically significant difference between K-8 and middle school outcomes, favoring K-8 schools (Poncelet & Associates, 2004).

The Rand Corporation, a nonprofit research group in Santa Monica, California completed a comprehensive report about middle grades' education in 2004. The report offered a harsh critique of middle schools in the U.S (Gill, Zimmer, Christman, & Blank, 2007). The report found that more than half of eighth-graders fail to achieve expected levels of proficiency in reading, math, and science on national tests. Reported levels of emotional and physical problems were higher among U.S. middle school students than among their peers, and it was found that U.S. middle school students have the most negative views of the climate of their schools and peer culture.

Behavior problems tend to escalate as students enter adolescence as well. Too many educators view middle school as an environment in which little is expected of students, either academically or behaviorally, on the assumption that

students must place self-discipline on hold until the hormone-driven storms of adolescence have passed (Yecke, 2006). Behavior problems can be categorized as either internalizing or externalizing problems. Internalized behavior problems are associated with emotional reticence, extreme shyness, withdrawal, depression, and anxiety. Externalized problems are characterized by behaviors such as defiance, stealing, destroying property, lying, aggression, and delinquency (Montague, Cavendish, Enders, and Dietz, 2009).

These externalized behavior problems can result in discipline referrals and suspensions, which increase during middle school (Hirst, 2005). Even with this increase in referrals and suspensions, middle school parents and teachers will claim that middle school discipline is often lax and intermittent. In a study conducted in Florida that analyzed suspension data for the 2002-2003 school year, 1.6% of elementary students and 16.9% of middle school students received In-School Suspensions. In addition, school districts had as many as 29% of their middle school students assigned to Out-of-School Suspensions (Arcia, 2007). It has been shown that student suspensions during 6<sup>th</sup> grade predict future suspensions in 7<sup>th</sup> and 8<sup>th</sup> grade (Wald & Losen, 2003), and suspensions have been shown to be a moderate to strong predictor of dropping out of school (Skiba & Peterson, 1999).

Internalized behavior problems may not lead to discipline referrals or suspensions nearly as much as externalized problems, but social problems can make students' middle school years very difficult. Social anxiety is characterized by excessive distress in social situations due to intense fears of negative

evaluation (Beidel & Turner, 2007). The peak onset of social anxiety disorder, or social phobia, is early to mid-adolescence (Beidel, Turner, & Morris, 1999). This disorder can be compounded when students are required to move to new school environments, with unfamiliar teachers, and new groups of students. Many adolescents with social anxiety disorder experience severe adjustment problems, including education underachievement, peer relationship problems, substance abuse, and other mood disorders (Beidel & Turner, 2007). Other common psychosocial problems, such as feelings of loneliness, peer victimization, and self-efficacy may exacerbate the suffering of a youth who is socially anxious.

### *Importance of Relationships*

It has often been said that rules, without relationship, equals rebellion. With adolescence being a time when students bend the rules and try to stretch boundaries, strong relationships with peers and adults can be extremely important. In an interview with Tony Barnes, principal of Hamilton Elementary-Middle School in Baltimore, Mr. Barnes and his team of teachers stated that behavior and discipline in the K-8 setting is better than in middle schools (Yecke, 2006). While teachers who had previously taught in elementary schools and transferred to Hamilton saw no difference, those who had worked in middle schools were unanimous in their support of the K-8 model. One teacher said that the elementary school mentality governed throughout the building. Although the school has almost 700 students enrolled, teachers credited the school's relative

smallness and said it fosters better behavior and sense of community. One teacher commented that “everybody knows everybody else, this gives us better oversight of our students.” One teacher felt that the presence of a child’s previous teacher provides extra incentive for the student to do well. This teacher felt that suspensions or expulsions were ineffective when compared to a child’s former teacher going to the student to express disappointment in a child’s poor behavior.

Interpersonal relationships can be demonstrably less positive in the middle school years, and some researchers have argued that the middle school provides a structure to facilitate negative behaviors such as cruelty or meanness among students (Merten, 1997). From a developmental perspective, the middle grades are generally a time of growing concern for popularity, with students placing increasing importance on interpersonal relationships. This shift in emphasis often results in nonconforming peer values, social competition, and mean behavior (Elder, 1985). The issue can be more problematic in middle schools, some argue, because adults in the school do not have as much of an opportunity to know what goes on among students because students have more teachers who see them for shorter periods of time each day. In addition, students spend more time outside the classroom, which means that adult intervention in the social arena is scarce (Merten, 1997).

Not only are relationships with adults important during the adolescent years, but mutual friendships with peers can serve as a protective factor in childhood and adolescence (Newton & Bagwell, 1995). Friendships can buffer

against psychosocial maladjustment associated with risk factors such as harsh discipline (Schwartz, Dodge, Pettit, Bates, & the Conduct Problems Prevention Research Group, 2000), social skill deficits (Fox & Boulton, 2006), general internalizing problems, and peer victimization (Hodges, Boivin, Vitaro, & Bukowski, 1999). Childhood friends have been observed to “stick up” for their friends during victimization incidents and to distract their friends following victimization episodes (Fox & Boulton, 2006). These supportive features of close friendships may become particularly critical around the transition to middle school, when early adolescents face a larger and less protective environment. This has led some educators to conclude that a smaller middle school setting, where students and teachers know each other well, would be beneficial. This setting is found in many K-8 schools. The number of students in the entire K-8 school may be large, but there are fewer middle school students overall, and they have strong relationships that have been built since early grades. In a recent article that followed two middle school students from two different middle schools in the southwestern United States, one major aspect was the number of students each student shares classes with daily (Fisher and Frey, 2007). One particular student who attended a large middle school attended classes with over 120 different students during each school day, reducing his opportunity to form working relationships and friendships. His cohort in another school attended classes with 47 other classmates, and of those 47, 30 had been in classes with him in previous years.

### *Other K-8 Considerations*

Overall, there seems to be a mismatch between the developmental needs of early adolescents and the environments of many middle schools. The transition from elementary to middle school is characterized by an increase in teacher control and discipline; a decrease in teacher effectiveness and efficacy and fewer opportunities for student decision making, choice, and self-management; an increase in whole-class task practices, ability grouping, and class work requiring a lower level of cognitive skills (Eccles, 1991). In contrast, “early adolescence is characterized by increases in the following: desire for autonomy from adult control, especially from one’s parent’s control; peer orientation, self-focus, self-consciousness and salience-of-identity issues; concerns over sexual relationships; and capacity for abstract cognitive ability” (Eccles, Lord, Roeser, Barber, & Hernandez, 1991, p. 534). Most middle schools are departmentalized, impersonal, and efficiency-driven environments. Early adolescent students do not need an increase in stressors, which middle school environments tend to create simply in the way they are organized. These stressors can impair social and emotional functioning and prevent adolescents from exerting more autonomy, engaging in more challenging work, connecting to personalized support from teachers and school administrators, and finding a familiar place that serves as a sanctuary from the daily hassles associated with life as an early adolescent (Poncelet & Associates, 2004).



With the onset of adolescence and puberty occurring during middle school years for many students, students' focus can be diverted from academics to more sexual matters. At Humboldt Park K-8 School in Milwaukee, teachers report that the middle grades at the school "are not a sexual environment" and were grateful that there had been no pregnancies. They said that while students flirt, "this mindset is more elementary," and students seem more prone to delay sexual activity (Yecke, 2006).

A need for more classroom space has caused some districts to consider the K-8 model. The Capistrano Unified School District in California is a good example (Howley, 1995). An elementary school in the district once housed nearly 1,300 students, but enrollment had declined to fewer than 800. In the meantime, the feeder middle school housed 1,800 students. Research on the effects of school size has clearly demonstrated that low-income students learn better in smaller schools. After considering several options and reviewing the literature on K-8 models nationwide, they chose to expand the elementary school to serve middle school students. A study in West Virginia found that small schools and districts were of benefit to impoverished students and that large schools compound the negative effects of being impoverished. In some cases the K-8 option has helped keep costs of constructing new school buildings to a minimum. Allowing students to attend schools closer to home also has saved massive transportation costs to bus students to schools of choice in places such as Milwaukee (Gewertz, 2004).

K-8 schools tend to have better parent involvement. Parents who are involved when their children begin school in early grades generally stay involved as their children get older. At Hamilton Elementary-Middle School in Baltimore, one teacher noted that, unlike most middle school students, Hamilton's middle grade students are not embarrassed when their parents come to school. The teacher said that students are used to having their parents at school during the elementary years, so it is nothing new to them (Yecke, 2006). In Cleveland, parent involvement has increased sharply, according to Chief Executive Officer Barbara Byrd-Bennett, since beginning the movement toward K-8 schools in the early 2000's. Ms. Byrd-Bennett claims that it's become a groundswell from the community, saying they want K-8's (Gewertz, 2004). Philadelphia moved toward the K-8 model, hoping that the school configuration might stem the flow of families to charter schools and the suburbs. The results have been favorable.

Teacher characteristics such as years of experience, levels of certification, retention rates, and attendance are better at many K-8 schools. In a study conducted by Vaughan Byrnes of the Philadelphia School District, it was found that K-8 schools had teaching staffs that averaged more than three years greater experience compared to teachers at middle schools (Byrnes and Ruby, 2007). In addition, the K-8 schools had lower rates of teacher absenteeism and greater proportions of certified teachers.

K-8 schools are seen by some as being safer for students, both from developmental and physical perspectives. Several studies have shown that the middle school is an alienating environment, one that negatively influences

students' sense of school belonging or connectedness to their school. In addition, students who attended K-8 schools were less likely to report feeling victimized or that their school was unsafe. (Eccles et al., 1991; Seidman et al., 1994).

Similarly, in a study using data from the National Education Longitudinal Survey, Anderman and Kimweli (1997) found that students in K-8 schools reported lower levels of crime victimization and held safer perceptions of their schools than students in the same grade attending middle schools. Jacquelynne Eccle, professor of psychology at the University of Michigan, states that middle schools "often became the antithesis of what reformers had intended; instead of warm incubators of independence and judgment, they became impersonal, oppressive institutions" (Wallis, Miranda & Rubiner, 2005).

### *Middle School Advocates*

Advocates of middle schools feel that 6<sup>th</sup>- 8<sup>th</sup> grade students can be served best in their own environments, apart from elementary students. They point to studies of 6<sup>th</sup> graders done in Arkansas in 2007 (Dove, Pearson & Hooper, 2010) and South Dakota (Johnson, 2002), which showed grade span configuration alone did not account for 6<sup>th</sup> grade students' academic achievement. In addition, a study of Philadelphia schools was conducted by Christopher Weiss and Lindsay Kipnes (2006) of Columbia University and they reported that in contrast to previous research findings and widely held beliefs about the effects of middle schools, their findings offered little support for

reformers seeking to improve students' performance in the middle grades by eliminating middle schools. They went on to say that the only area they found middle school students having a measurable disadvantage was in students' self-esteem.

Sue Swaim, executive director of the National Middle School Association in 2004, stated that the middle school concept “cannot be faulted for educational deficiencies it did not create and practices it did not recommend” (Hough, 2005). Swaim also reported that in a national survey of K-8 and 6-8 administrators by McEwin, Dickinson, and Jacobson, the majority favored middle school as “the best organizational structure for young adolescents” (p.1). Middle school reformers point out that implementing reform requires going beyond new structures to change how people communicate, make decisions, deliver instruction, relate to students, and coordinate their work (Erb, 2006). Reformers also indicate that some of the very big school districts that have failed to make middle schools work failed to make other reforms work in their secondary schools. For example, independent studies in several big cities discovered the failure to implement small learning communities in their secondary schools. Cincinnati, Philadelphia, and Denver—all associated with implementing K-8 schools—are specifically criticized for failing to successfully implement small communities of learning (Wallis et al., 2005).

According to the National Middle School's Policy Statement (2003), high-quality middle schools should incorporate several important components. First, a primary goal of high-quality middle schools is improving academic achievement

for all students. Second, teachers and staff of middle schools need to understand the unique needs of adolescent students. It can be argued that the primary goal of middle schools originally was to understand the emotional needs of students, with little focus on academic achievement, however, the focus now should be to improve academic achievement while having an understanding of students' unique needs during adolescence.

According to the policy statement, high quality middle schools will improve academic achievement by providing a challenging and integrative curriculum. This can be a challenge in a middle school setting because each teacher usually teaches just one core subject area. Math teachers may collaborate with other math teachers, but may not traditionally collaborate with Language Arts, science, and social studies teachers. In high-quality middle schools, these meetings and subsequent integration of curriculum should be taking place. In order for this collaboration to be ongoing, planning time must be built into daily schedules.

High quality middle schools should also create supportive and safe environments for students, with structures such as small teaching teams of teachers being recommended. Small teams of teachers enable students, parents, and teachers to have closer relationships. Small teaching teams seem to help young adolescents' need for a sense of belonging and security; improved family relationships, and a support system through puberty's ups and downs (Balfanz, Spiridakis, & Neiid, 2002).

The policy report concluded emphasizing that grade span configuration is not what causes success or failure in the middle grades. High quality schools,

regardless of configuration, have certain components in place to support students. The report states that “no matter which grade configuration school districts choose, the most important decision is what kind of education they will offer young adolescents” (2003). Research on both middle schools and K-8 schools clearly suggests the importance of creating small learning communities, high-quality relationships, and strong transition supports. It may well be that attaching grades 6-8 to the elementary side of schooling proves more effective in implementing these principles and practices than does treating these grades as a junior version of high school.

### *Summary*

The period of the middle-grades in education has seen a number of educational reforms that have sought to better tailor instruction and improve student outcomes in these years. The idea for a separate institution devoted to education of early adolescents emerged in the late nineteenth and early twentieth century (Clark and Clark, 1993). The middle school model was designed to serve as a bridge to help students make the transition from the classrooms of elementary schools to the departments and class periods of high schools (Eichorn, 1966). According to Lounsbury, middle schools grew rapidly over the next 20 years, but proved disappointing in practice, with studies on the effects of middle schools showing that “the new middle schools and old high schools were surprisingly alike in actual practice” (Lounsbury, 1991, p. 64).

Numerous school districts throughout the country have chosen to return to a K-8 model to educate students in the middle grades. In Cleveland, Ohio, twenty-one middle schools were reconfigured to K-8 schools in the early 2000's. A review of the literature suggests that middle grades students perform better academically in K-8 schools than in middle schools. Opponents suggest that if students are placed in middle schools with interdisciplinary teams and offer students support they need, that students will perform better in middle schools. The purpose of this study was to analyze student achievement growth of one cohort of students from three schools, in the same district, over a four-year period and to analyze data from the transition years, 5<sup>th</sup> to 6<sup>th</sup> grade, for three different cohorts, during the same period. The data were analyzed to determine if achievement falls when elementary students transition to other schools. Also, data were analyzed to see if K-8 or middle school students have more longitudinal growth over a four-year period of time. Data from the elementary to middle school transition years were analyzed from the same four-year period to see if there was a difference in student achievement between school structures.

From the establishment of the first junior high school in the early 1900s to the reorganization of middle schools into K-8 schools in the 2000s, policy decisions pertaining to school organization appear to have been based mainly on structural considerations and less on sound research (Clark, 2012). Negative outcomes related to various social-emotional variables have been linked to middle schools in the body of research, however, the connection between middle schools and poor academic performance has yet to be established with any

degree of certainty. What has been undeniable is the fact that adolescent students are not meeting society's academic expectations. Moreover, middle schools have taken the brunt of the criticism for results that reinforce that conclusion.



## *CHAPTER 3*

### *Methodology*

The purpose of this study was to determine whether there was a difference between the academic achievement of middle grades students in schools with 6-8 grade configurations and schools with K-8 configurations in one upstate South Carolina district. This chapter is organized into four sections in the following manner. The first section focuses on the design of the study, the second section describes the population under investigation and the sample selected, and the third section describes the instrumentation that was used to collect data. Finally, the researcher describes the data collection process and gives a summary.

### *Research Design*

The first research question was addressed by analyzing the MAP reading growth for students from 5<sup>th</sup> to 8<sup>th</sup> grade, according to spring scores, in K-8 and traditional 6-8 middle schools. A Factorial Repeated Measures ANOVA was conducted to determine if there was a difference in MAP reading growth for students from 5<sup>th</sup> to 8<sup>th</sup> grade in a K-8 school versus those in traditional 6-8

middle schools. The independent variable had two factors—school type and grade. School type had two levels—K-8 and traditional 6-8 middle school. Grade was the grade in which the student took the MAP test and has three levels—6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup>. The within subjects factor was grade, and the between subjects factor was school type. The dependent variable was the achievement growth on MAP reading, as measured by the difference in the student's spring RIT scores. Each student's growth was calculated for 6<sup>th</sup> grade, 7<sup>th</sup> grade, and 8<sup>th</sup> grade. The 6<sup>th</sup> grade growth was calculated by subtracting the 5<sup>th</sup> RIT score from the 6<sup>th</sup> RIT score, the 7<sup>th</sup> grade growth was calculated by subtracting the 6<sup>th</sup> RIT score from the 7<sup>th</sup> RIT score, and the 8<sup>th</sup> grade growth was calculated by subtracting the 7<sup>th</sup> RIT score from the 8<sup>th</sup> RIT score. Main effects and interactions were analyzed. The assumptions of independence, normality, equal variances, and sphericity were reviewed. Based on the results of the ANOVA, appropriate follow-up tests were conducted if necessary.

The second research question was addressed by analyzing the MAP math growth for students from 5<sup>th</sup> to 8<sup>th</sup> grade, according to spring scores, in K-8 and traditional 6-8 middle schools. A Factorial Repeated Measures ANOVA was conducted to determine if there was a difference in MAP math growth for students from 5<sup>th</sup> to 8<sup>th</sup> grade in a K-8 school versus those in traditional 6-8 middle schools. The independent variable had two factors—school type and grade. School type had two levels—K-8 and traditional middle school. Grade was the grade in which the student took the MAP test and had three levels—6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup>. The within subjects factor was grade, and the between subjects factor

was school type. The dependent variable was the achievement growth on MAP math, as measured by the difference in the student's spring RIT scores. Each student's growth was calculated for 6<sup>th</sup> grade, 7<sup>th</sup> grade, and 8<sup>th</sup> grade. The 6<sup>th</sup> grade growth was calculated by subtracting the 5<sup>th</sup> RIT score from the 6<sup>th</sup> RIT score, the 7<sup>th</sup> grade growth was calculated by subtracting the 6<sup>th</sup> RIT score from the 7<sup>th</sup> RIT score, and the 8<sup>th</sup> grade growth was calculated by subtracting the 7<sup>th</sup> RIT score from the 8<sup>th</sup> RIT score. Main effects and interactions were analyzed. The assumptions of independence, normality, equal variances, and sphericity were reviewed. Based on the results of the ANOVA, appropriate follow-up tests were conducted if necessary.

The third research question was addressed by analyzing MAP reading growth for students from 5<sup>th</sup> to 6<sup>th</sup> grade, according to spring scores, from 2010-2013. A 3X2 Factorial ANOVA was conducted to determine if achievement growth during the 6<sup>th</sup> grade transition year was different for students who remained in their K-8 schools and students who transitioned from a traditional elementary school to a 6-8 middle school for 6<sup>th</sup> grade. The dependent variable was the achievement growth on MAP reading as measured by the difference in the student's 5<sup>th</sup> grade and 6<sup>th</sup> grade spring RIT scores. There were three separate years of student transition data available and two independent variables. The first independent variable, and the one of interest for this study, was school structure. There were two levels: K-8 school and 6-8 school (traditional middle school). The second independent variable, of much lesser importance for this study, was the year. There were three levels as student

transition data was available for the school years of 2010-11, 2011-12, and 2012-13. The years are simply referred to as 2011, 2012, and 2013 since spring scores of each school year were being reviewed. Descriptive statistics for each group were analyzed. The assumptions of independence, normality, and equal variances were reviewed. Based on the results of the ANOVA, appropriate follow-up tests were conducted if necessary.

The fourth research question was addressed by analyzing MAP math growth for students from 5<sup>th</sup> to 6<sup>th</sup> grade, according to spring scores, from 2010-2013. A 3X2 Factorial ANOVA was conducted to determine if achievement growth during the 6<sup>th</sup> grade transition year was different for students who remained in their K-8 schools and students who transitioned from a traditional elementary school to a 6-8 middle school for 6<sup>th</sup> grade. The dependent variable was the achievement growth on MAP math as measured by the difference in the student's 5<sup>th</sup> grade and 6<sup>th</sup> grade spring RIT scores. There were three separate years of student transition data available and two independent variables. The first independent variable, and the one of interest for this study, was school structure. There were two levels: K-8 school and 6-8 school (traditional middle school). The second independent variable, of much lesser importance for this study, was the year. There were three levels as student transition data is available for the school years of 2010-11, 2011-12, and 2012-13. The years are simply referred to as 2011, 2012, and 2013 since spring scores of each school year were being reviewed. Descriptive statistics for each group were analyzed. The assumptions

of independence, normality, and equal variances were reviewed. Based on the results of the ANOVA, appropriate follow-up tests were conducted if necessary.

The following conceptual framework (Figure 3.1) provides an effective visual representation of the variables and core concepts presented for study within research questions 1 and 2:

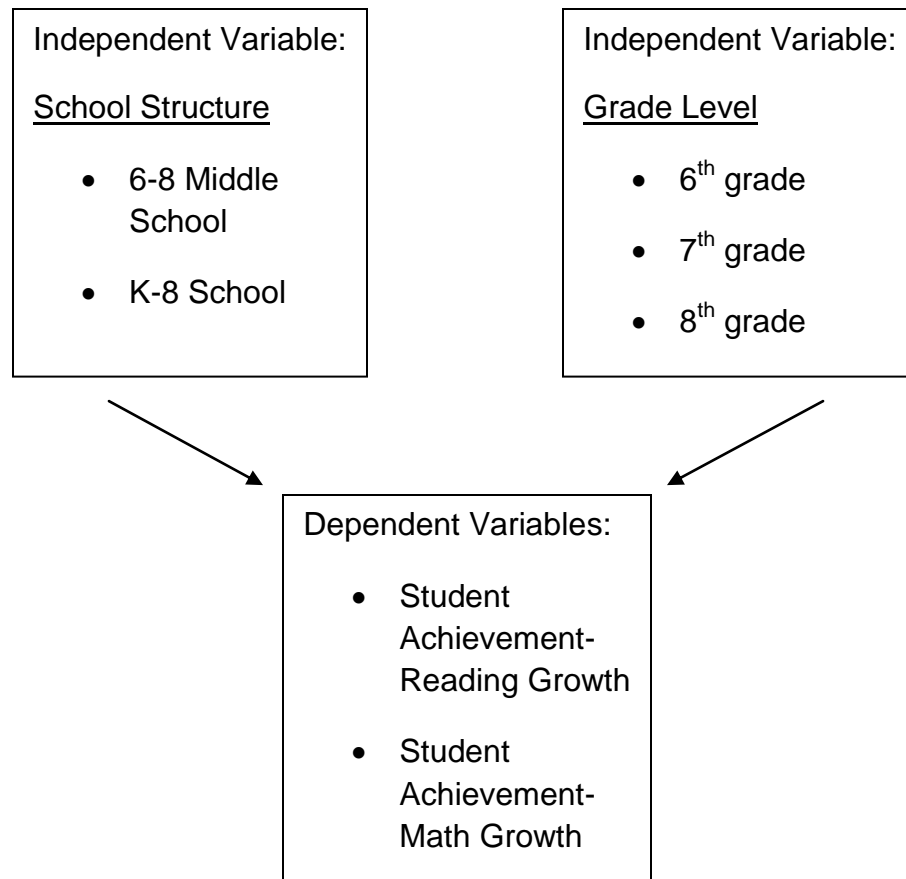


Figure 3.1

*Conceptual Framework for Research Questions 1 & 2*

The following conceptual framework (Figure 3.2) provides an effective visual representation of the variables and core concepts presented for study within research questions 3 and 4:

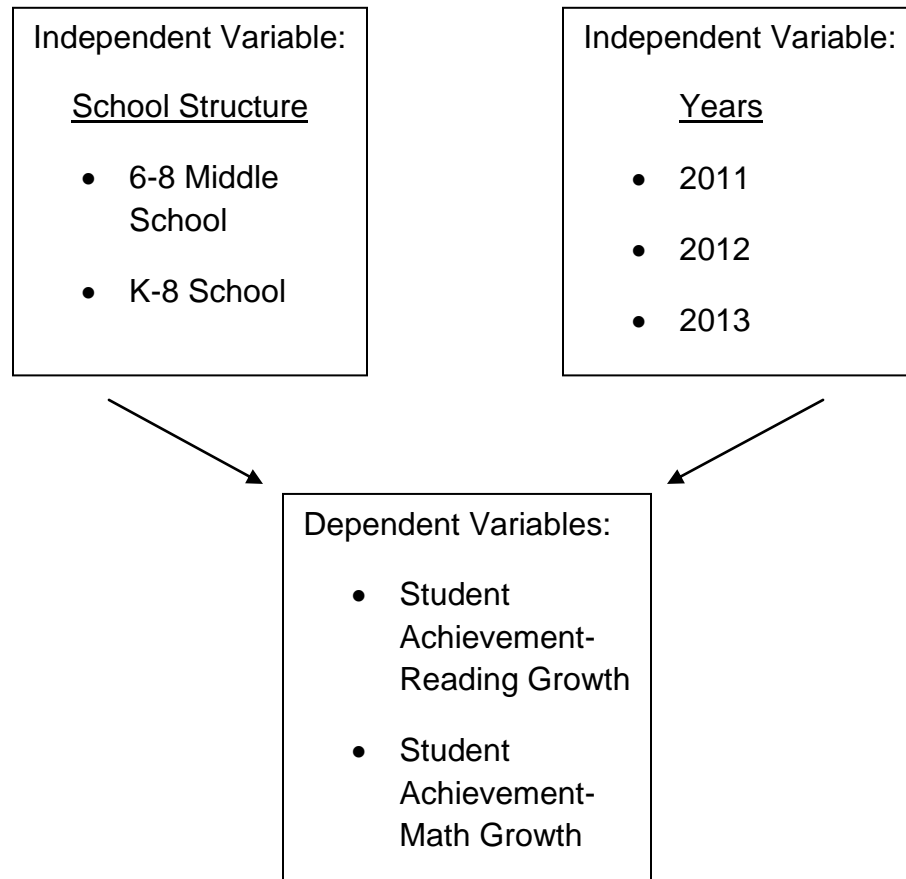


Figure 3.2

*Conceptual Framework for Research Questions 3 & 4*

### *Population and Sample*

Three schools within the same district in South Carolina were the focus of this study. Two schools were considered “traditional” middle schools and served students in grades six through eight exclusively. One school was a K-8 school and served middle grades students within a school that served students from five year old kindergarten through eighth grade. The population for this study was all of the middle grades students in the district from 2010-10 to 2012-13. The first middle school had approximately 525 students of which 83.1% of the population was African-American, 4.2% was Hispanic, 8.9% was white, and the poverty index was 98.6%. The second middle school had approximately 695 students of which 35.9% of the population was African-American, 3.1% was Hispanic, 57.4% was white, and the poverty index was 55.4%. The K-8 school had approximately 920 students, with 260 of the students being in grades 6-8. Approximately 66.4% of the population was African-American, 4.1% was Hispanic, 20.8% was white, and the poverty index was 87.8% (SC Report Card Portal, 2013).

The sample included all members of the population who remained in the district from 2010-11 to 2012-13. However, students who were retained during the three years of middle school, or who were not in the district all three years and thus did not have the necessary data, were excluded from the study. The data from these two traditional middle schools were compared to sixth through eighth grade data from the one school that is K-8 in structure.

This study was guided by the following research questions:

1. Is there a difference in reading growth for students from 5<sup>th</sup> to 8<sup>th</sup> grade in a K-8 school versus those in traditional 6-8 middle schools?
2. Is there a difference in math growth for students from 5<sup>th</sup> to 8<sup>th</sup> grade in a K-8 school versus those in traditional 6-8 middle schools?
3. Is the reading achievement growth of students from 5<sup>th</sup> to 6<sup>th</sup> grade different when the transition to middle school is within a K-8 school versus when the transition is from an elementary to a traditional 6-8 middle school?
4. Is the math achievement growth of students from 5<sup>th</sup> to 6<sup>th</sup> grade different when the transition to middle school is within a K-8 school versus when the transition is from an elementary to a traditional 6-8 middle school?

### *Instrumentation*

Measures of Academic Progress (MAP) was the instrument used to measure the achievement growth of students in reading and math for this study. MAP is “a state-aligned computerized adaptive assessment program that provides educators with the information they need to improve teaching and learning” developed by NWEA, or Northwest Evaluation Association (NWEA,



2004). MAP is currently being used by more than 3,400 school districts and educational partners. MAP tests measure growth over time, and the scores are independent of grade level. The norm-referenced tests are given on computer and can be given up to four times per year. MAP is normed every 3 years, with the latest being in 2011 (NWEA, 2014). Based on norms from 2008, 6,905 schools in 1,123 districts in 42 states administered MAP tests to students. The norming report states, “The fact that little change in status and growth was noted between the 2005 study and the current study is not unexpected, since the sample sizes in each study are so large that a major change in education would be needed to affect the norms substantially. On the other hand, individual schools and districts show remarkable differences in how their students grow” (NWEA, 2014, p. 160). The 2011 study’s results were based on grade level samples of at least 20,000 students per grade. These samples were randomly drawn from a test records pool of 5.1 million students, from over 13,000 schools in more than 2,700 school districts in 50 states. Rigorous post-stratification procedures were then used to maximize the degree to which both status and growth norms are representative of the U.S. school-age population (NWEA, 2014).

Rasch Unit scores (RIT scores) are the measurement scale developed to simplify the interpretation of test scores (Parent Toolkit, 2011). The RIT defines student achievement by assigning a value of difficulty to each item. A “RIT measures understanding regardless of grade level, so the information helps to track a student’s progress from year to year” (NWEA, 2010).

### *Data Collection Process*

To address research questions one and two, the researcher collected reading and math MAP RIT scores for students from 5<sup>th</sup> grade in 2010, 6<sup>th</sup> grade in 2011, 7<sup>th</sup> grade in 2012, and 8<sup>th</sup> grade in 2013 spring administrations. The data were extracted from the district's test score database, TestView. All standardized test data, report card data, and course history are stored in this system. The data were collected during the winter of 2014. The score data were extracted without names and remained anonymous to maintain confidentiality

To address research questions three and four, the researcher collected reading and math MAP RIT scores for students from 5<sup>th</sup> grade in 2010, 2011, and 2012, and 6<sup>th</sup> grade in 2011, 2012, and 2013 spring administrations. The data were extracted from the district's test score database, Testview. All standardized test data, report card data, and course history are stored in this system. The data were collected during the winter of 2014. The score data were extracted without names and remained anonymous to maintain confidentiality.

### *Summary*

Chapter Three has addressed the study design and methodology used to analyze the four research questions. Chapter Four provides the details of the

results, and Chapter Five presents a summary of the entire study including conclusions that can be drawn from the data analysis.

## CHAPTER 4

### *Results*

As stated in Chapter One, this study examined the effects of school structure in an urban upstate South Carolina school district. This study sought to determine if reading and math growth in grades 6-8 were related to the grade structure of the school. More specifically, the study was done to see if there was a relationship between reading and math achievement in middle school students who attended K-8 schools for grades 6-8 as opposed to those attending 6-8 middle schools. The first two research questions analyzed growth over a three year period of time for the same students, while the final two research questions analyzed transition year data for students moving from 5<sup>th</sup> to 6<sup>th</sup> grade over a three year period.

Chapter Four provides the results of the analyses conducted for each of the four research questions. It begins with a description of the sample used in this current study. Following this, the results of the research questions listed below will be presented in order:

1. Is there a difference in reading growth for students from 5<sup>th</sup> to 8<sup>th</sup> grade in a K-8 school versus those in traditional 6-8 middle schools?

2. Is there a difference in math growth for students from 5<sup>th</sup> to 8<sup>th</sup> grade in a K-8 school versus those in traditional 6-8 middle schools?
3. Is the reading achievement growth of students from 5<sup>th</sup> to 6<sup>th</sup> grade different when the transition to middle school is within a K-8 school versus when the transition is from an elementary to a traditional 6-8 middle school?
4. Is the math achievement growth of students from 5<sup>th</sup> to 6<sup>th</sup> grade different when the transition to middle school is within a K-8 school versus when the transition is from an elementary to a traditional 6-8 middle school?

### *Description of the Sample*

This study researched three schools within the same district in South Carolina. The study examined the difference in eight cohorts of students. The first cohort of students (Cohort A) was from 6-8 grade students in a K-8 school. The second cohort of students (Cohort B) was from 6-8 grade students in two traditional 6-8 middle schools. Students in Cohorts C-E transitioned to middle grades within a K-8 school from 2011-13. Students in Cohorts F-H transitioned to middle school from separate elementary schools from 2011-13. One school was K-8 and served middle grades students within a school that serves students from five year old kindergarten through eighth grade. The sample included all 6-8

grade students who remained in the district from 2010-11 to 2012-13. However, students who were retained during the three years of middle school or who were not in the district all three years, and thus did not have the necessary data, were excluded from the study. The data from these two traditional middle schools were compared to sixth through eighth grade data from the one school that is K-8 in structure. Research questions 1 and 2 analyzed data from Cohorts A&B (Table 4.1), while research questions 3 and 4 analyzed data from Cohorts C-H (Table 4.2).

Table 4.1

*Students in Each Cohort, Research Questions 1 and 2*

Years	K-8 School Cohort A	6-8 Middle Schools Cohort B
2011, 6 <sup>th</sup> grade	57	275
2012, 7 <sup>th</sup> grade	57	275
2013, 8 <sup>th</sup> grade	57	275

Table 4.2

*Students in Each Cohort, Research Questions 3 and 4*

Years	K-8 School Cohorts	6-8 Middle School Cohorts
2011, transition year	64, Cohort C	371, Cohort F
2012, transition year	62, Cohort D	370, Cohort G
2013, transition year	79, Cohort E	332, Cohort H

The data from Cohorts A and B were used to answer Research Questions 1 and 2. Research Questions 3 and 4 were analyzed using data from Cohorts C through H. Cohort sizes for Research Questions 1 and 2 are the same all three years as these numbers indicate the number of students who remained in the district, in their same school structures, for all three years. Cohort sizes for Research Questions 3 and 4 were different because these questions measured each student's data for one transition year only.

*Research Question 1*

The purpose of the first research question was to determine if there was a difference in reading growth for students from 6<sup>th</sup> to 8<sup>th</sup> grade in a K-8 school versus those in traditional 6-8 middle schools. This question was addressed by conducting a Repeated Measures Factorial ANOVA, which reviewed the MAP reading scores for the students in both school structures in 2011, 2012 and 2013. Table 4.3 shows the descriptive statistics for each cohort.

Table 4.3

*Descriptive Statistics for Reading Growth by Cohorts A and B*

Group	<i>M</i>	<i>SD</i>
Cohort A (n=57) 2011	3.54	8.61
Cohort A (n=57) 2012	2.60	6.78
Cohort A (n=57) 2013	5.98	6.49
Cohort B (n=275) 2011	6.05	7.81
Cohort B (n=275) 2012	2.87	7.26
Cohort B (n=275) 2013	3.16	8.05

The assumptions of normality and independence were not violated. A significant interaction between school type and year was found [ $F(2, 329) = 4.832, p = .009$ ]. According to the Wilk's Lambda test for the effect of time, there also appears to be a significant change over time ( $p = .043$ ). The significant interaction between time and type of school suggests that the change in MAP scores over the three years was influenced by the type of school.

The growth means of the data over the three years were nearly identical (4.04 for K-8 versus 4.03 for 6-8). There was not a significant difference in mean reading growth when considering school configuration alone [ $F(2, 329) = 4.832, p = .009$ ]. Time appeared to be the main factor that showed a difference in scores. Therefore, contrasts were run to determine the specific timeframes of significance.



Post hoc comparisons using Bonferroni adjustments indicate that the mean score for 6-8 Middle School was significantly different (see Table 4.4) from 6<sup>th</sup> grade testing in 2011 ( $p = .000$ ) and between the two-year timeframe of when students took reading MAP in 6<sup>th</sup> grade until they took it in 8<sup>th</sup> grade in 2013 ( $p = .000$ ). Furthermore, the estimated marginal means over the three year period for the middle schools showed a decrease in growth from the first test administration in 2011 to the final test administration in 2013. The data for the middle grades students in K-8 were not significant, although there was an increase in growth from the first test administration in 2011 to the final administration in 2013 (see Table 4.5). The overall difference in reading growth mean scores from 6<sup>th</sup> to 8<sup>th</sup> grade in the 6-8 Middle Schools was -2.89. The overall difference in reading growth mean scores from 6<sup>th</sup>-8<sup>th</sup> grade in the K-8 school was 2.44 (see Figure 4.1).

Table 4.4

*Reading Growth Yearly Comparisons, 6-8 Middle Schools*

Year	Mean	Difference
6 <sup>th</sup> grade, 2011	6.05	
7 <sup>th</sup> grade, 2012	2.87	-3.18
8 <sup>th</sup> grade, 2013	3.16	.29
Overall Growth 2011-2013	-2.89	

Table 4.5

*Reading Growth Yearly Comparisons, K-8 Middle Grades Students*

Year	Mean	Difference
6 <sup>th</sup> grade, 2011	3.54	
7 <sup>th</sup> grade, 2012	2.60	-0.94
8 <sup>th</sup> grade, 2013	5.98	3.38
Overall Growth 2011-2013	2.44	

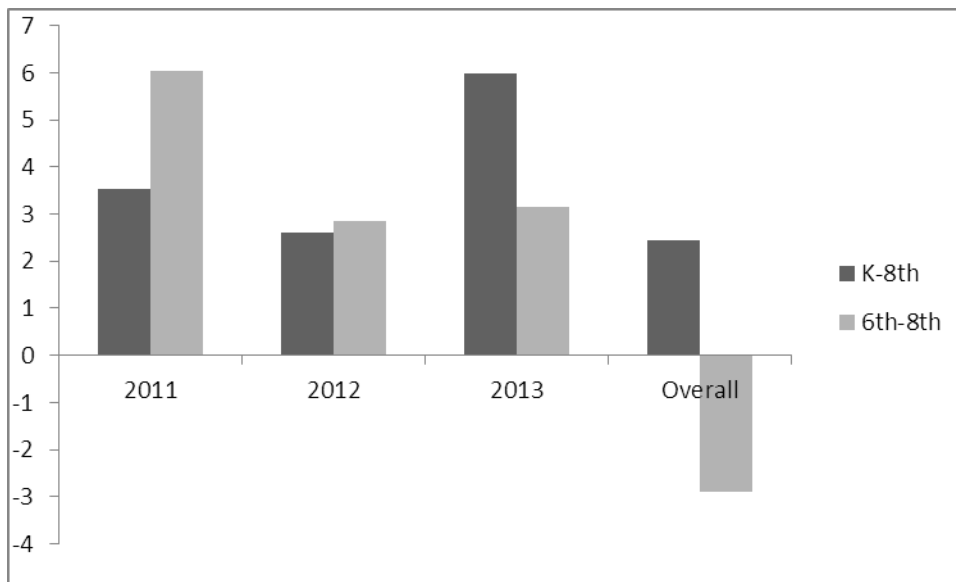


Figure 4.1

*Reading Growth Yearly Comparisons*

### *Research Question 2*

The purpose of the second research question was to determine if there was a difference in math growth for students from 5<sup>th</sup> to 8<sup>th</sup> grade in a K-8 school versus those in traditional 6-8 middle schools. This question was addressed by conducting a Repeated Measures Factorial ANOVA, which reviewed the MAP math scores for the students in both school structures in 2011, 2012 and 2013. Table 4.6 shows the descriptive statistics for each cohort.

Table 4.6

#### *Descriptive Statistics for Math Growth by Cohorts A and B*

Group	<i>M</i>	<i>SD</i>
Cohort A (n=57) 2011	3.56	7.56
Cohort A (n=57) 2012	6.07	5.84
Cohort A (n=57) 2013	5.53	6.68
Cohort B (n=275) 2011	5.96	7.57
Cohort B (n=275) 2012	5.32	8.24
Cohort B (n=275) 2013	4.56	8.03

The assumptions of normality and independence were not violated. No significant interaction between school type and year was found [ $F(2, 330) =$

2.822,  $p = .061$ ]. According to the Wilk's Lambda test for the effect of time, there was not a significant change over time ( $p = .607$ ).

The average growth means of the data over the three years showed that the middle school students in the 6-8 Middle Schools had more overall growth (5.28) than the students in the K-8 school (5.05). Although there were no differences of statistical significance, more overall growth from grades 6 to 8 was seen in the K-8 school (see Table 4.7). The overall difference in math growth mean scores from 6<sup>th</sup> to 8<sup>th</sup> grade in the 6-8 Middle Schools was -1.40. The overall difference in math growth mean scores from 6<sup>th</sup>-8<sup>th</sup> grade in the K-8 school was 1.97 (See Figure 4.2). Due to the fact that there were no significant interactions between time and type of school, post hoc comparisons were not necessary in the analysis of math scores.

Table 4.7

*Math Growth Overall Yearly Comparisons*

Year	6-8 Middle Schools' Mean	Difference 6-8	K-8 Schools' Mean	Difference K-8
2011	5.96		3.56	
2012	5.32	-0.64	6.07	2.51
2013	4.56	-0.76	5.53	-.54
Overall Difference 2011-13	-1.40		1.97	

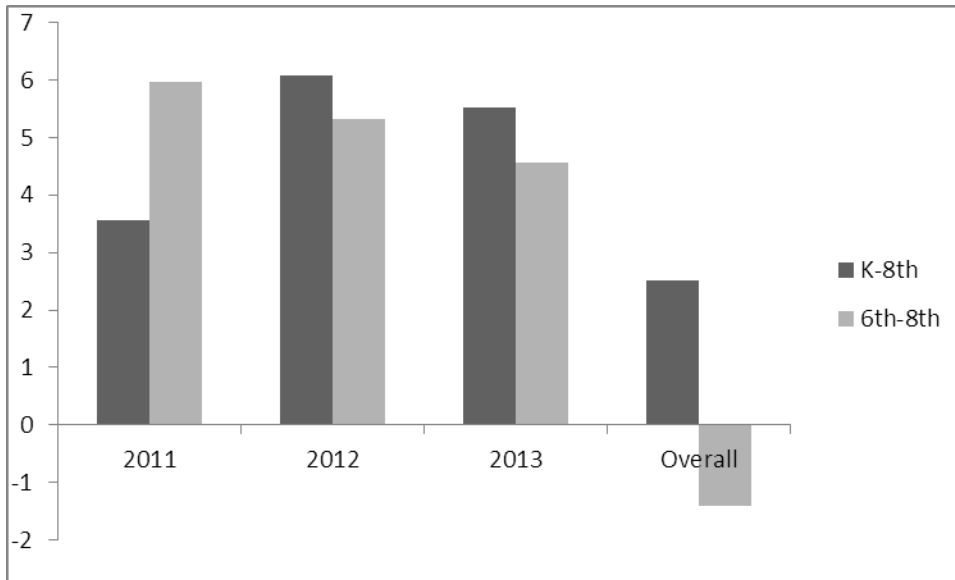


Figure 4.2

*Math Growth Overall Yearly Comparisons*

### *Research Question 3*

The purpose of the third research question was to determine if the achievement growth of students in reading was different when the transition 5<sup>th</sup> to 6<sup>th</sup> grade was within a K-8 school versus when the transition was from an elementary to a traditional 6-8 middle school. The assumptions of normality and independence were not violated. No significant interaction between school type and year was found [ $F(2, 1272) = 1.343, p = .261$ ]. No significant effects were found for year [ $F(1, 1272) = 2.779, p = .062$ ] or school type [ $F(1, 1272) = 0.002, p = .960$ ].

Table 4.8

*Descriptive Statistics for Reading Growth by Cohorts C through H*

Group	<i>M</i>	<i>SD</i>
Cohort C (n=64) 2011	4.63	6.55
Cohort D (n=62) 2012	3.98	9.63
Cohort E (n=79) 2013	3.30	8.68
Cohort F (n=371) 2011	3.83	8.29
Cohort G (n=370) 2012	5.54	8.89
Cohort H (n=332) 2013	2.64	8.32

Although there were no statistically significant differences in school type or time overall, there were differences in the growth means between school structures in certain years. In 2011, the growth mean for K-8 students was 4.63, which was higher than the 3.83 mean in the 6-8 Middle Schools. In 2012, the opposite held true, with 6-8 Middle School students outperforming their counterparts with a mean of 5.54 to the K-8 school's growth mean of 3.98. In 2013, the K-8 school had higher growth with a mean of 3.30 to the 6-8 Middle School's mean of 2.64. The total growth means over the 3 year period were similar, with the K-8 mean being 3.93 and the 6-8 Middle School mean being 4.05 (see Figure 4.3).

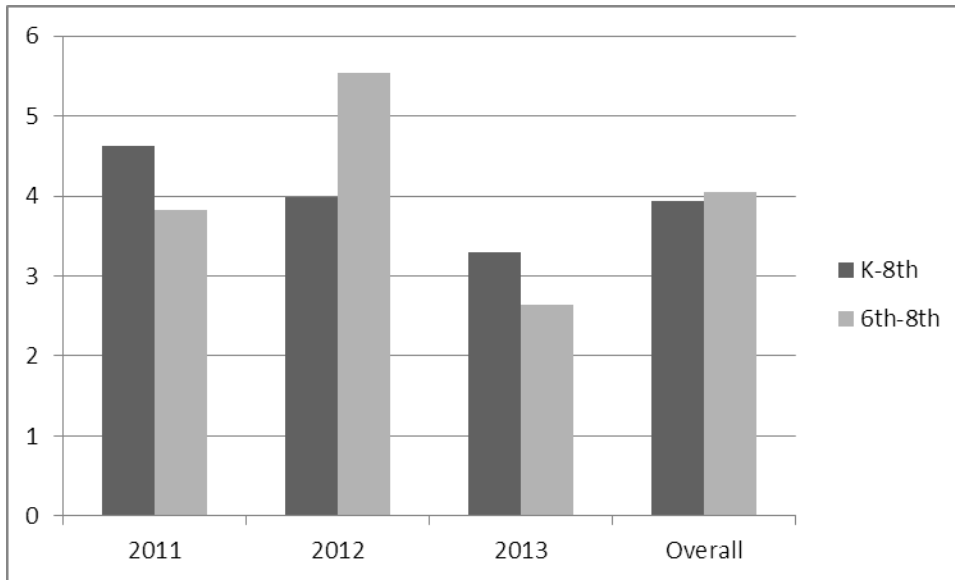


Figure 4.3

*Reading Mean Growth, 2011-2013*

#### *Research Question 4*

The purpose of the fourth research question was to determine if the achievement growth of students in math was different when the transition from 5<sup>th</sup> to 6<sup>th</sup> grade was within a K-8 school versus when the transition was from an elementary to a traditional 6-8 middle school. The assumptions of normality and independence were not violated. There was a significant effect on math achievement due to the year [ $F(2, 1279) = 14.785, p = .000$ ]. Therefore, math achievement from at least one year is significantly different from at least one of the other years. Additionally, there was also a significant effect on school type [ $F(1, 1279) = 4.746, p = .030$ ] according to tests of between-subjects effects.

Table 4.9

*Descriptive Statistics for Math Growth by Cohorts C through H*

Group	<i>M</i>	<i>SD</i>
Cohort C (n=64) 2011	5.62	8.52
Cohort D (n=62) 2012	8.91	7.01
Cohort E (n=79) 2013	4.55	7.96
Cohort F (n=371) 2011	4.96	7.17
Cohort G (n=370) 2012	6.71	7.70
Cohort H (n=332) 2013	3.68	7.19

There was no significant interaction between school type and time, but there were significant effects on both time and school type individually. There were differences in the growth means between school structures in certain years. In 2011, the growth mean for K-8 students was 5.62, which was higher than the 4.96 mean in the 6-8 Middle Schools. In 2012, the same held true, with K-8 Middle School students outperforming their counterparts with a mean of 8.91 to the 6-8 school's growth mean of 6.71. In 2013, the K-8 school had higher growth once again with a mean of 4.55 to the 6-8 Middle School's mean of 3.68. The total growth means over the 3 year period were in favor of the K-8 structure with a mean of 6.36 and the 6-8 Middle School mean being 5.12 (see Figure 4.4).



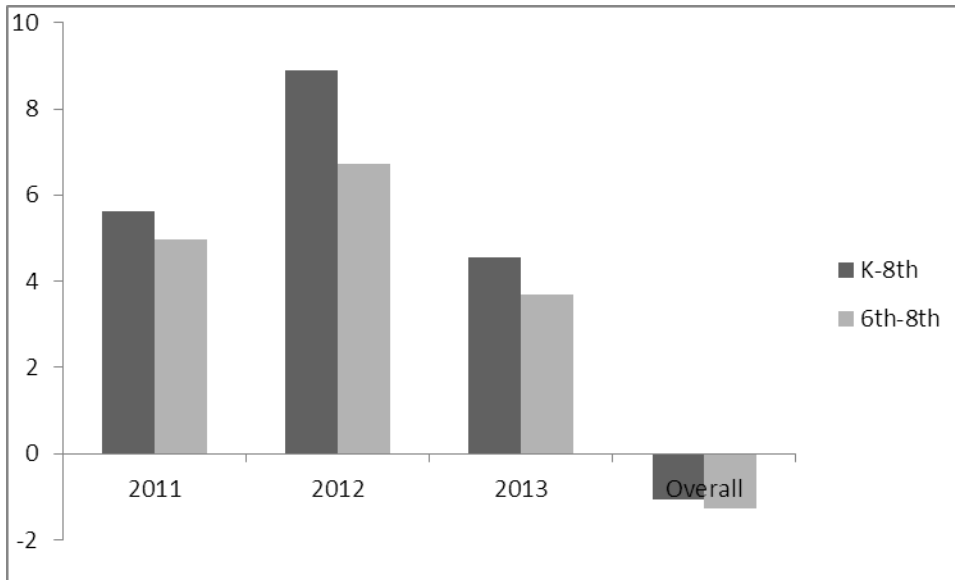


Figure 4.4

*Math Mean Growth, 2011-2013*

### *Summary*

The first research question addressed if there was a difference in reading growth for students from 6<sup>th</sup> to 8<sup>th</sup> grade in a K-8 school versus those in traditional 6-8 middle schools. Significant differences were found between school type and year that suggested that the change in MAP scores was influenced by the type of school students attended. Time appeared to be the main factor and post hoc comparisons revealed that there was a significant difference in 6<sup>th</sup> grade scores, as well as an overall significant difference in growth from 6<sup>th</sup> to 8<sup>th</sup> grade.

The second research question addressed if there was a difference in math growth for students from 6<sup>th</sup> to 8<sup>th</sup> grade in a K-8 school versus those in

traditional 6-8 middle schools. There were no significant differences in the area of math. K-8 students saw more overall growth between 6<sup>th</sup> and 8<sup>th</sup> grades, but 6-8 students had a higher mean growth over the 3 year period.

The third research question was to determine if the achievement growth of students in reading was different when the transition from 5<sup>th</sup> to 6<sup>th</sup> grade was within a K-8 school versus when the transition was from an elementary to a traditional 6-8 middle school. There were no significant differences in growth means between school structures. Both school structures were similar in the amount of growth and each structure had better growth, than the other in at least one of the years studied.

The fourth research question was to determine if the achievement growth of students in math was different when the transition from 5<sup>th</sup> to 6<sup>th</sup> grade was within a K-8 school versus when the transition was from an elementary to a traditional 6-8 middle school. Although there was no significant interaction between school type and year, there was a significant effect in math achievement due to the year.

Chapter Five presents a complete summary of the study, a more thorough discussion of the conclusions, and recommendations for further research.

## *CHAPTER 5*

### *Conclusion*

This Chapter presents a summary of the study and a discussion of the results of the data analysis presented in Chapter Four. A summary of the study will be presented first, followed by an overview of the problem. The purpose statement and research questions will then be given, followed by a discussion of the significance of the study. A review of the methodology used will be discussed, and the findings of the study will be analyzed. Finally, the results related to the research will be analyzed, and recommendations for further research will be given.

### *Summary of Study*

School configuration has been changing since the beginning of the twentieth century when the K-8 and secondary school (high school grades 9-12) changed to include a separate junior high school for grades 7-9. The junior high school model was begun to keep students in school and continue their education through ninth grade with hopes that students would continue into high school and subsequently enter college. The 7-9 junior high school model remained intact for

many decades until the middle school movement began in the 1960's. The middle school concept focused on the developmental aspect of students, and the main goal was to create a supportive environment for the unique needs of early adolescent students. The middle school structure was configured with grades six, seven, and eight. Middle schools became the most widely accepted school structure for grades 6-8 and are still employed by many districts.

Beginning in the 1990's, several large school districts, such as Baltimore, Cleveland, Cincinnati, Philadelphia, and New York that had 6-8 middle school configurations returned to K-8 schools (Viadero, 2008). Low student achievement, higher discipline problems, and parent dissatisfaction with 6-8 middle school education were a few of the reasons behind the changes. According to Jennifer Fager of the Northwest Regional Educational Laboratory Information Services, some information exists with respect to middle school students, but beyond that, it is mostly anecdotal in nature. However, she said that many people feel positive about the K through 8 concept (Cromwell, 1999).

School configuration varies from district to district and from state to state. Grade configuration that is desirable or possible in one location may be undesirable or not possible in another. In South Carolina, school districts have local control with regard to school configuration. In this study, the researcher used student achievement scores of 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grade students from two different school structures, K-8 and 6-8 middle school. MAP reading and math test results from the 2010-11 school year through the 2012-13 school year were analyzed from about 1,500 students in one upstate South Carolina district.

Reading and math scores were analyzed by the researcher to determine if middle grades students performed better in the K-8 school or the 6-8 middle school.

### *Purpose Statement*

The purpose of this study was to add to the research on school configuration for adolescent students and the impact on student achievement. The decision to have both school configurations within one district was based on significant research and discussion. The school district being studied intended to shift away from the 7-9 junior high school model and shift toward the 6-8 middle school structure. The district had three 7-9 junior high schools for decades, but student enrollment at one was low, and it needed to be closed. Student enrollment within the district was too high for the two remaining middle schools, so one elementary school was chosen to become a K-8 school. This school was chosen because it had the capacity to handle more students and for many years, the students at this particular elementary school were not choosing to follow the feeder pattern to the assigned 7-9 junior high school. Creating a K-8 school structure would alleviate overcrowding at the two 6-8 middle schools and possibly stem the tide of students choosing to leave the district from this school zone.

After this reorganization took place, questions began to arise as to which school structure yielded higher student achievement, if any. Therefore, one

purpose of this study was to analyze the achievement of middle school students in the areas of reading and math within this one district that contained both 6-8 middle schools and a K-8 school. Student achievement was analyzed by determining longitudinal MAP growth in reading and math over a three-year period of time. The second purpose of this study was to analyze the achievement of middle grades students in the areas of reading and math during the transition year from 5<sup>th</sup> to 6<sup>th</sup> grade. Data for three different groups of students were analyzed to see if the transition year from 5<sup>th</sup> to 6<sup>th</sup> grade impacted student achievement within a K-8 setting differently than from an elementary to a traditional 6-8 middle school.

### *Research Questions*

To accomplish the purposes described above, the following research questions will be addressed:

1. Is there a difference in reading growth for students from 5<sup>th</sup> to 8<sup>th</sup> grade in a K-8 school versus those in traditional 6-8 middle schools?
2. Is there a difference in math growth for students from 5<sup>th</sup> to 8<sup>th</sup> grade in a K-8 school versus those in traditional 6-8 middle schools?
3. Is the reading achievement growth of students from 5<sup>th</sup> to 6<sup>th</sup> grade different when the transition to middle school is within a K-8 school

versus when the transition is from an elementary to a traditional 6-8 middle school?

4. Is the math achievement growth of students from 5<sup>th</sup> to 6<sup>th</sup> grade different when the transition to middle school is within a K-8 school versus when the transition is from an elementary to a traditional 6-8 middle school?

### *Significance of the Study*

In the current age of accountability, it is important for educators to make data-driven decisions. Although there are strong feelings on both sides of the debate as to which school configuration is better for adolescent students, student achievement is ultimately how schools are evaluated. This study sought to analyze the achievement of 6-8 grades students housed in differing school configurations to add to the research base on school structure and the possible impact on student achievement. Whereas many ideas and changes in public education sound good, it is important that they be based on empirical evidence in order to help students. The intent of the district's move from three, 7-9 junior high schools to two, 6-8 middle schools and one K-8 school, was threefold. First, out of the 85 districts in South Carolina, the district being studied was one of two that still had the 7-9 junior high configuration. The community and district leadership felt that a 6-8 middle school model, with interdisciplinary teams of teachers working together, would increase student achievement. Second, it helped

economically because one school was being closed, while another elementary school was being filled to capacity. Lastly, creating a 6-8 middle school in the location chosen would hopefully keep students in the district longer and keep them from leaving after elementary school.

Another significant aspect of this study is the impact of school transition on student achievement. This study sought to determine if reading and math growth was higher during the transition year from 5<sup>th</sup> to 6<sup>th</sup> grade if students stayed in the same school, as opposed to moving to a different structure for middle school. By understanding how school configurations affect students, their achievement, and their classroom environments, district leaders can make more informed decisions about the type of school configuration that will best meet their needs.

### *Review of Methodology*

The purpose of this study was to analyze student achievement growth in the areas of reading and math between middle grades students in a K-8 school and traditional 6-8 middle schools in the same district. The first research question was addressed by analyzing the yearly longitudinal MAP RIT reading growth over a three year period of time. This was done for two cohorts of students, with one cohort being from a K-8 school and the other containing students from two 6-8 middle schools. A Factorial Repeated Measures ANOVA was conducted to compare the yearly means for each school configuration. The independent variables were school structure and year. The dependent variable was the



growth in MAP score, found by subtracting the previous year's spring RIT score from the current year's spring RIT score. The assumptions associated with running an ANOVA were tested, including tests of normality and equal variance. Post hoc comparisons, using Bonferroni adjustments, were analyzed if significant results were found.

The second research question was addressed by analyzing the yearly longitudinal MAP math growth over the same three year period of time. This was done for two cohorts of students, with one cohort being from a K-8 school and the other containing students from two 6-8 middle schools. A Factorial Repeated Measures ANOVA was conducted to compare the yearly means for each school configuration. The independent variables were school structure and year. The dependent variable was the growth in MAP score, found by subtracting the previous year's spring RIT score from the current year's spring RIT score. The assumptions associated with running an ANOVA were tested, including tests of normality and equal variance. Post hoc comparisons, using Bonferroni adjustments, were analyzed if significant results were found.

The third research question was addressed by analyzing the yearly MAP RIT reading growth during the transition years from 5<sup>th</sup> to 6<sup>th</sup> grade. This was done for six cohorts of students, with three cohorts being from the district's K-8 school, and the other three cohorts being from the traditional 6-8 middle schools in the district. A 3X2 Factorial ANOVA was conducted to compare the means of the cohorts from each school configuration type yearly between 2011 and 2013. The independent variables were school structure and year. Each structure's

annual mean growth in reading was compared to the opposing configuration's growth, and yearly growth was compared within each school structure as well using pairwise comparisons to determine if significant differences occurred. The dependent variable was the growth in MAP reading scores, found by subtracting the previous year's spring RIT score from the current year's RIT score. The assumptions associated with running an ANOVA were tested, including tests of normality and equal variance. Post hoc comparisons, using Scheffe's method, were analyzed if significant results were found.

The fourth research question was addressed by analyzing the yearly MAP RIT math growth during the transition year from 5<sup>th</sup> to 6<sup>th</sup> grade. This was done for six cohorts of students, with three cohorts being from the district's K-8 school, and the other three cohorts being from the traditional 6-8 middle schools in the district. A 3X2 Factorial ANOVA was conducted to compare the means of the cohorts from each school configuration type yearly between 2011 and 2013. The independent variables were school structure and year. Each structure's annual mean growth in math was compared to the opposing configuration's growth, and yearly growth was compared within each school structure as well using pairwise comparisons to determine if significant differences occurred. The dependent variable was the growth in MAP math scores, found by subtracting the previous year's spring RIT score from the current year's RIT score. The assumptions associated with running an ANOVA were tested, including tests of normality and equal variance. Post hoc comparisons, using Scheffe's method, were analyzed if significant results were found.

## *Findings and Discussion*

The following section presents the findings of each research question and a discussion of those findings:

### *Research Question 1*

Is there a difference in reading growth for students from 5<sup>th</sup> to 8<sup>th</sup> grade in a K-8 school versus those in traditional 6-8 middle schools?

### *Results*

A significant interaction between school type and year was found according to the Repeated Measures Factorial ANOVA. There was also a significant change over time according to the Wilk's Lambda test. The significant interaction between time and type of school suggested that the change in reading MAP scores over the three years was influenced by school type. Post hoc comparisons using Bonferroni adjustments indicated that the mean score for the 6-8 middle school configuration was significantly different for Cohort B in 2011 ( $p = .000$ ) and 2013 ( $p = .000$ ). The data for the middle school students in the K-8 configuration were not significant.

### *Discussion*

The estimated marginal means over the three year period for 6-8 middle schools showed a significant decrease (-2.89) from the first test administration in 2011 to the final test administration in 2013. The estimated marginal means over the three year period for the K-8 school showed an increase (2.44) from the first

administration in 2011 to the final administration in 2013. It must be noted that the means during the first test administration in 2011 were very different, with the 6-8 middle school mean (6.05) being much higher than the mean of the K-8 school (3.54), but this was almost flipped for the final administration in 2013 with the 6-8 middle school mean (3.16) being almost half of the mean for the K-8 school (5.98).

### *Research Question 2*

Is there a difference in math growth for students from 5<sup>th</sup> to 8<sup>th</sup> grade in a K-8 school versus those in traditional 6-8 middle schools?

### *Results*

Using a Repeated Measures Factorial ANOVA, no significant interaction between school type and year was found according to the Wilk's Lambda test. Post hoc tests were also not needed for time since its effect was not significant ( $p = .061$ ).

### *Discussion*

The estimated marginal means over the three year period for 6-8 middle schools showed more growth (5.28) from the first test administration in 2011 to the final test administration in 2013 than for K-8 (5.05). As in reading, it must be noted that the means during the first test administration in 2011 were very different, with the 6-8 middle school mean (5.96) being much higher than the mean of the K-8 school (3.56). By the final test administration in 2013, the 6-8 middle school mean (4.56) was lower than the mean for the K-8 school (5.53).

### *Research Question 3*

Is the reading achievement growth of students from 5<sup>th</sup> to 6<sup>th</sup> grade different when the transition to middle school is within a K-8 school versus when the transition is from an elementary to a traditional 6-8 middle school?

### *Results*

No significant interaction between school type and year was found according to the 3X2 Factorial ANOVA.

### *Discussion*

In both school configurations, there were no significant effects in school type or year during the transition years from elementary to middle school in reading achievement. The total growth means for both school types were very similar, with the 6-8 middle schools (4.01) having more growth than the K-8 school (3.93) when combining all three years of data.

### *Research Question 4*

Is the math achievement growth of students from 5<sup>th</sup> to 6<sup>th</sup> grade different when the transition to middle school is within a K-8 school versus when the transition is from an elementary to a traditional 6-8 middle school?

### *Results*

No significant interaction between school type and year was found according to the 3X2 Factorial ANOVA ( $p = 0.501$ ). There was a significant effect on math achievement due to year ( $p = .000$ ). Therefore, math achievement from at least one year is significantly different from at least one of the other years. Using pairwise comparisons, the years of significance are 2011 to 2012, and 2012 to

2013. Additionally, there appears to be a significant effect on school type according to tests of between-subjects effects ( $p = .030$ ).

### *Discussion*

The growth mean in math for the K-8 configuration (6.357) was higher than the mean for 6-8 middle schools (5.115) when combining all three years' data.

Additionally, the K-8 school had more growth all three years compared to their counterparts in 6-8 middle schools. However, both structures are similar in that they saw growth in math achievement dip during the final test administration in 2013.

### *Findings Related to Research*

One school configuration did not achieve better overall than the other, but there were areas in which the K-8 model saw more growth than the 6-8 middle schools. It can be concluded that one school structure did not outperform the other academically overall, but that school type is a contributing variable in longitudinal reading achievement, and in math achievement during the transition years from elementary school to middle school.

One fact of interest is that school type sometimes did, and sometimes did not, play a role in affecting reading and math growth. These findings do not match those of Simmons and Blyth (1987) who analyzed junior high and K-8 schools in the Milwaukee school system. They found that seventh grade students in the junior high school did not do as well in achievement, either GPA or

standardized test, as the students in seventh grade in the K-8 schools. However, a study done by Byrnes and Ruby (2007), looked at the Philadelphia City School District and compared 6-8 middle schools as well as newly formed K-8 schools. The results showed that older K-8 schools (schools that existed prior to the district's reform efforts) performed significantly better than middle schools, but the new K-8 schools (created as part of the district's reform) did not perform better than middle schools. In the same school district when looking at high poverty schools, 6-8 middle schools were reported to be less effective in terms of test scores than K-8 schools in the same district.

Although there significant differences were not found for school type when longitudinal growth scores were calculated for this study, it must be noted that the higher growth means in reading and math for traditional 6-8 middle schools were seen in 6<sup>th</sup> grade, and then fell through the middle school years. Conversely, K-8 middle grades students had their lowest growth means in 6<sup>th</sup> grade, and then had an upward trajectory going through to 8<sup>th</sup> grade. A 1996 U.S. Department of Education policy brief declared that students from 4<sup>th</sup> to 8<sup>th</sup> grades face a precipitous decline in achievement (Yecke, 2005). In this study, K-8 middle grades students actually saw an overall increase in longitudinal growth from 5<sup>th</sup> to 8<sup>th</sup> grade.

Studies conducted in Connecticut and Maine suggested that students in middle school grades are best included in elementary school settings. In the Connecticut study, 6<sup>th</sup> grade achievement was higher when 6<sup>th</sup> grade was included with lower levels (Howley, 2002). In our South Carolina study, 6<sup>th</sup> grade

achievement was almost identical in reading for traditional 6-8 middle school or K-8 middle grades students. However, growth was significantly higher for 6<sup>th</sup> grade students from the K-8 school in math during the transition year from 5<sup>th</sup> to 6<sup>th</sup> grade.

Balfanz, Spiridakis, and Nieid (2002) concluded high poverty K-8 schools outperformed high poverty middle schools. Looking at poverty and other variables and how they contribute to student performance in each school structure could be a reason the studies have different results. This may be especially true in K-8 schools in suburban areas, where some children attend to escape some of the social problems of inner-city 6-8 middle schools.

The studies done in Philadelphia, Baltimore, and Milwaukee looked at larger populations, which could also present differing results. Regardless of the results, the environment that adolescents enter into must be set up in such a way that allows for maximum potential in every student. To increase student achievement scores in any school structure, one must start with the student, who they are, and what their individual needs are. Determining their needs can allow educators to more specifically create an environment that maximizes every student's potential to succeed academically.

### *Implications and Recommendations for Further Research*

There are several implications for practical use in schools, regardless of the configuration. First, adolescent students need to be served by



interdisciplinary teams of teachers. This allows teachers to have stronger relationships with a limited number of students. It also allows students to have a relationship with a caring adult. Furthermore, it allows the team of teachers to be proactive with students and to help with problems as they arise. Each team should take into consideration how students are supported emotionally, socially, and academically within their environment to support their development and overall achievement.

Another implication for practical use in schools is to actively engage parents in their children's learning. One advantage parents cited of K-8 schools was that they could still be involved in their child's school, as they were in the earlier grades. Most likely, middle schools do not purposely exclude parents, but it may be possible that parents do not feel comfortable coming into the 6-8 middle school as they did in elementary. This could be because middle schools have different staff members and are many times combined with other school zones with new people, so they may not make the effort to get involved.

If a school district is looking at providing choice within their district to attract or retain students, consider looking at configuration as a way to optimize the potential within a district. Families may appreciate being offered the choice for students in grades 6-8 to attend an alternate school configuration.

There are several recommendations for further research on school configuration. First, further analysis of multiple sources of data may give additional insight as to how students are performing in each type of school configuration. Second, further research in which data are analyzed by controlling

for variables such as ethnicity and poverty may show if one type of school structure yields more growth.

Another recommendation is to determine how parent attitudes and values play a role in selecting one school configuration over the other. For example, do parents value testing data, or are they looking for a school that has more elective choices? Do sports offerings play a factor, or are they looking for the school that will yield the most growth academically?

Further research could be done on how students perform after they transition to high school from 6-8 middle schools compared to K-8 schools. More research is also needed on teacher certification and how this plays a role in student achievement at the middle school grades. Some states, including South Carolina, allow teachers to teach 6<sup>th</sup> grade with an elementary degree. An analysis of student achievement data from those teachers teaching core area subjects with elementary degrees could prove very informative as opposed to those having a subject-specific middle school certification.

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